0993560 1203.1

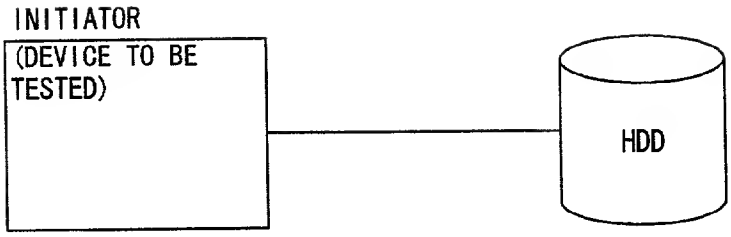

FIG. 1A

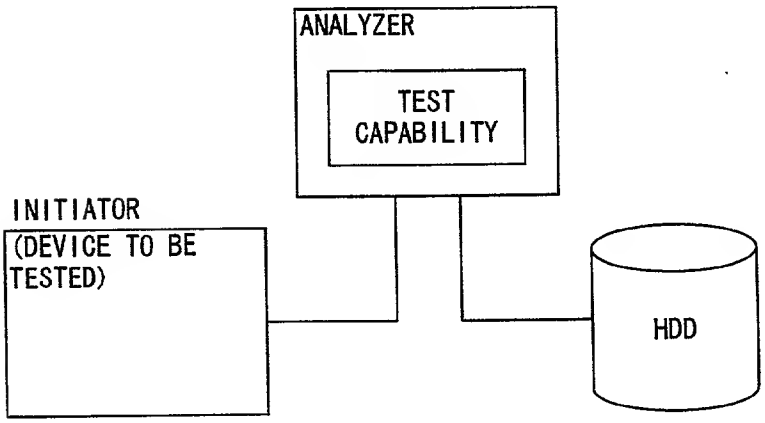

FIG. 1B

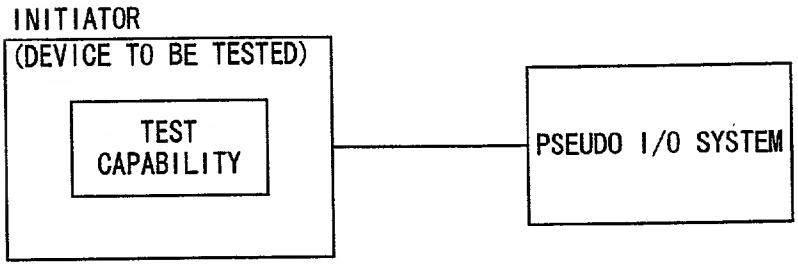

FIG. 1C

JP2005-115950

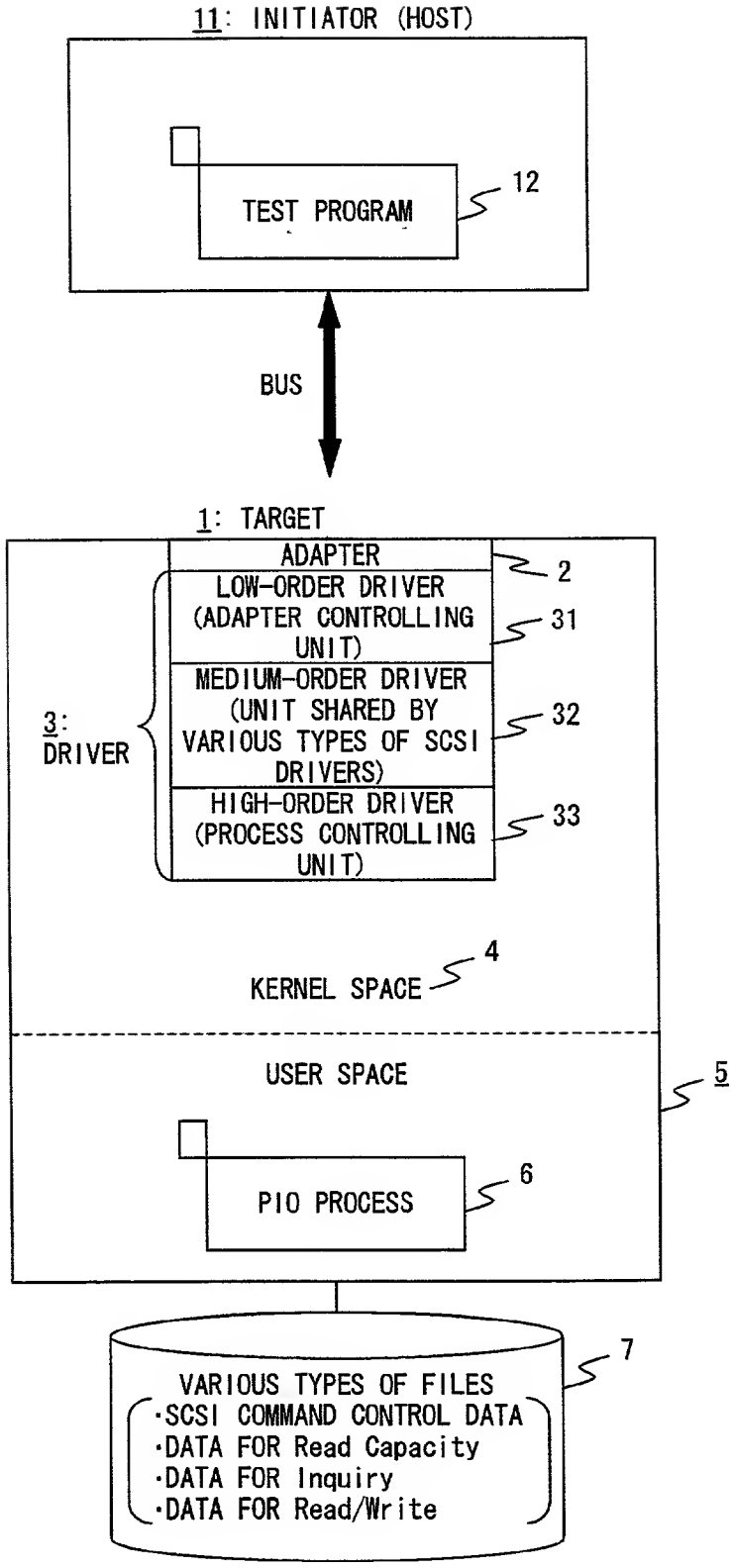

FIG. 2

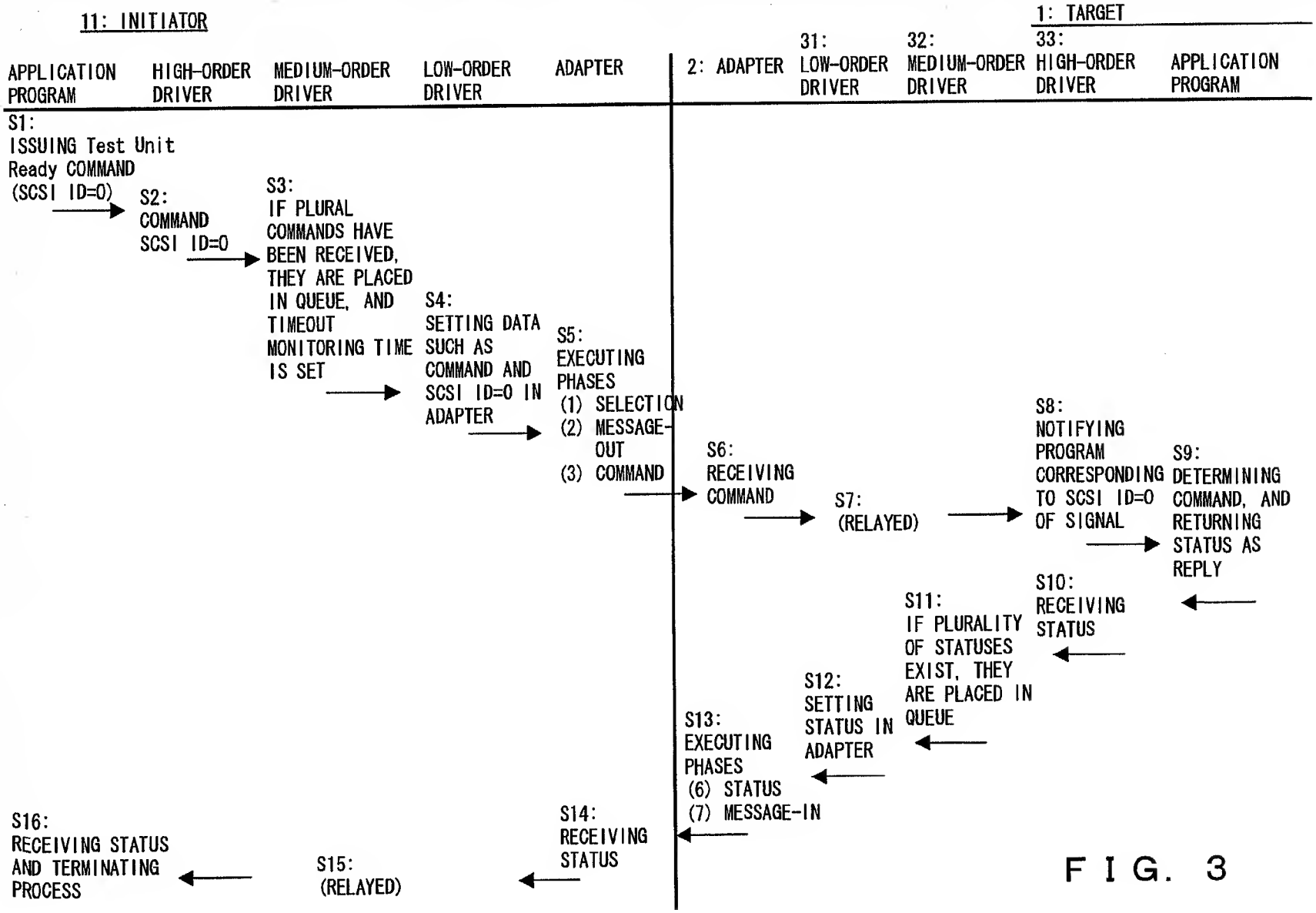
11: INITIATOR
1: TARGET
APPLICATION PROGRAM
HIGH-ORDER DRIVER
MEDIUM-ORDER DRIVER
LOW-ORDER DRIVER
ADAPTER
2: ADAPTER
31: LOW-ORDER DRIVER
32: MEDIUM-ORDER DRIVER
33: HIGH-ORDER DRIVER
APPLICATION PROGRAM
S1: ISSUING Test Unit Ready COMMAND (SCSI ID=0)
S2: COMMAND SCSI ID=0
S3: IF PLURAL COMMANDS HAVE BEEN RECEIVED, THEY ARE PLACED IN QUEUE, AND TIMEOUT MONITORING TIME IS SET
S4: SETTING DATA SUCH AS COMMAND AND SCSI ID=0 IN ADAPTER
S5: EXECUTING PHASES (1) SELECTION (2) MESSAGE-OUT (3) COMMAND
S6: RECEIVING COMMAND
S7: (RELAYED)
S8: NOTIFYING PROGRAM CORRESPONDING TO SCSI ID=0 OF SIGNAL
S9: DETERMINING COMMAND, AND RETURNING STATUS AS REPLY
S10: RECEIVING STATUS
S11: IF PLURALITY OF STATUSES EXIST, THEY ARE PLACED IN QUEUE
S12: SETTING STATUS IN ADAPTER
S13: EXECUTING PHASES (6) STATUS (7) MESSAGE-IN
S14: RECEIVING STATUS
S15: (RELAYED)
S16: RECEIVING STATUS AND TERMINATING PROCESS

FIG. 3

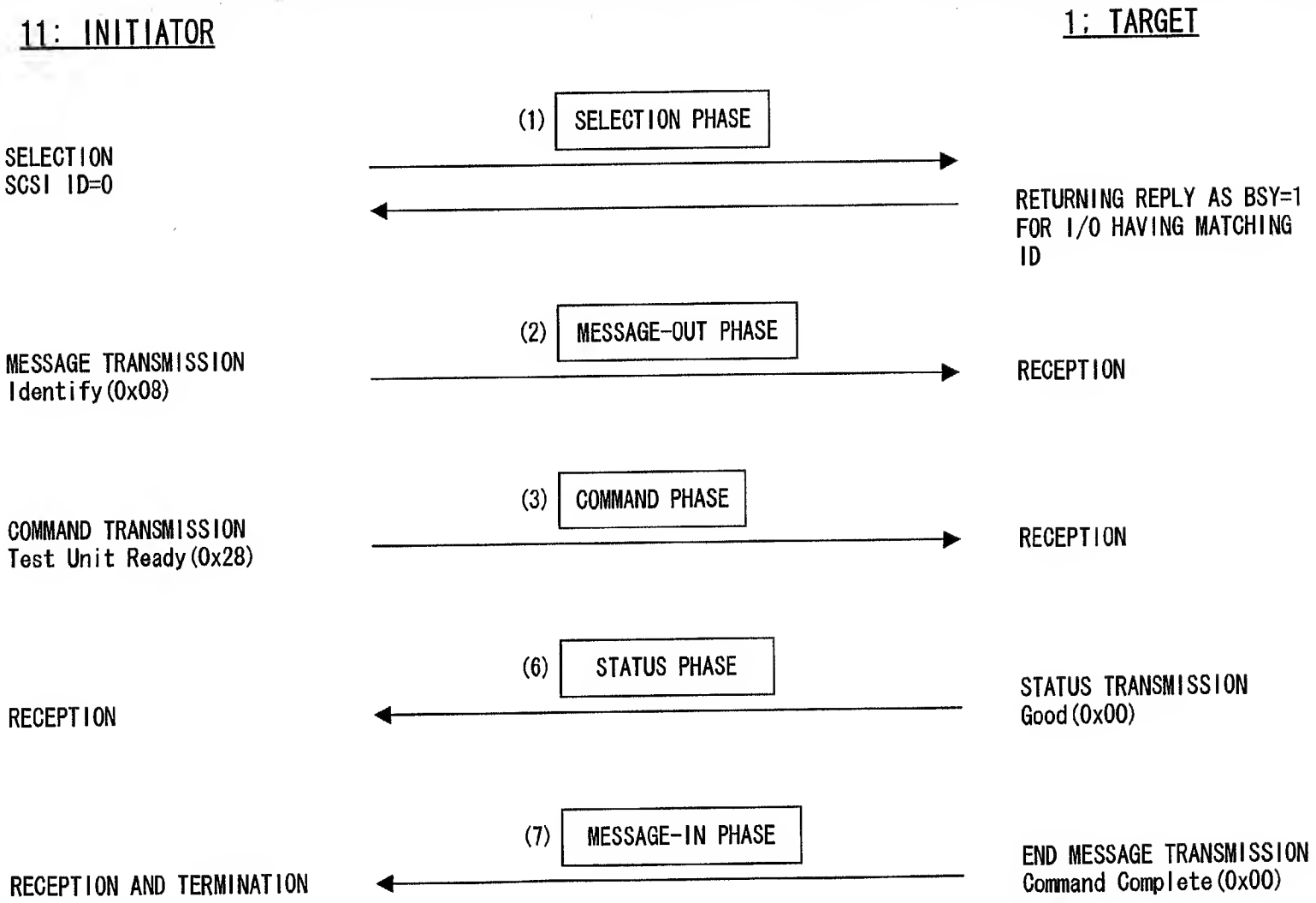
11: INITIATOR
1: TARGET
(1) SELECTION PHASE
SELECTION
SCSI ID=0
RETURNING REPLY AS BSY=1
FOR I/O HAVING MATCHING
ID
(2) MESSAGE-OUT PHASE
MESSAGE TRANSMISSION
Identify(0x08)
RECEPTION
(3) COMMAND PHASE
COMMAND TRANSMISSION
Test Unit Ready(0x28)
RECEPTION
(6) STATUS PHASE
RECEPTION
STATUS TRANSMISSION
Good(0x00)
(7) MESSAGE-IN PHASE
RECEPTION AND TERMINATION
END MESSAGE TRANSMISSION
Command Complete(0x00)

FIG. 4

JP02-179660

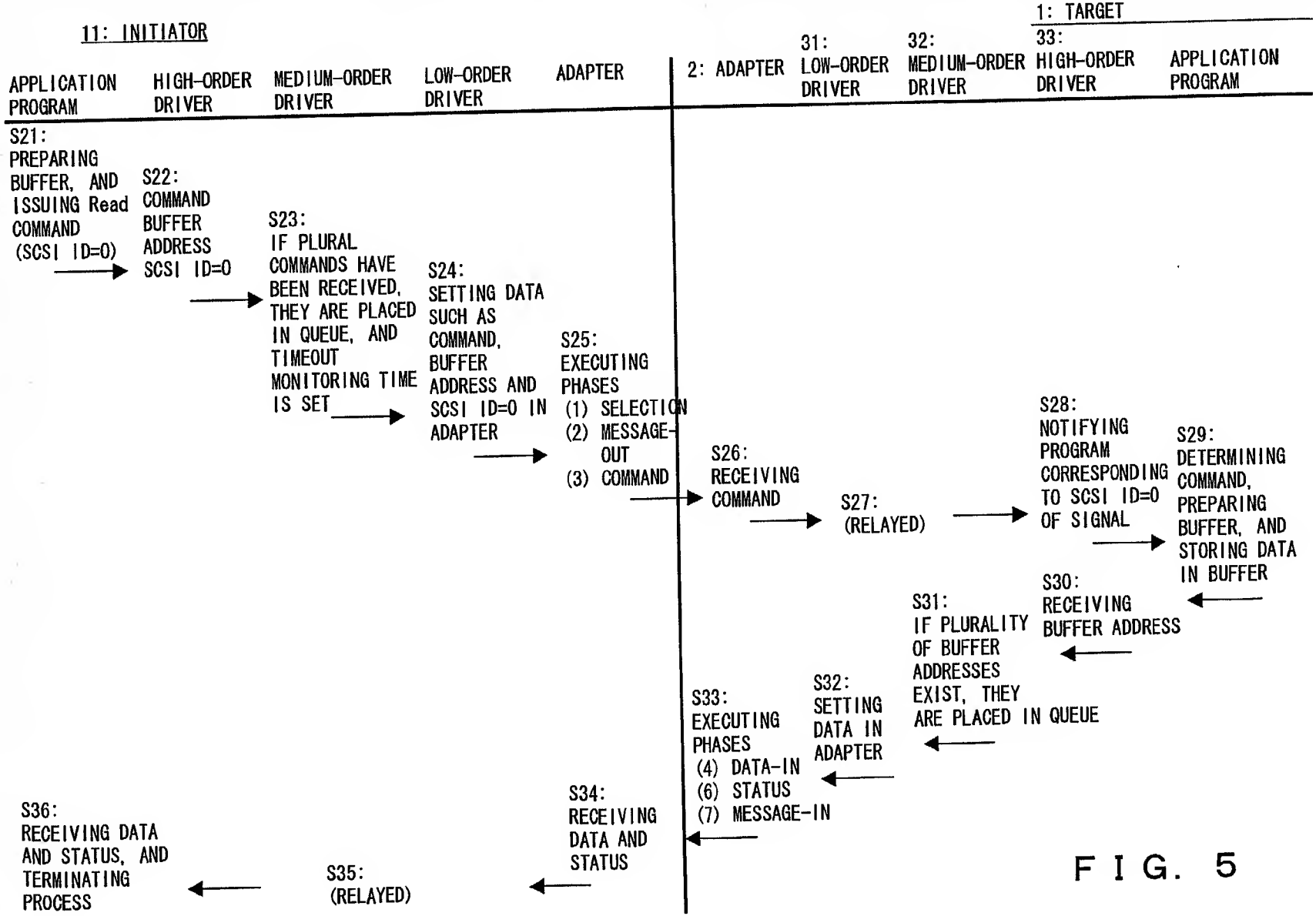

FIG. 5

FOE02F 97586660

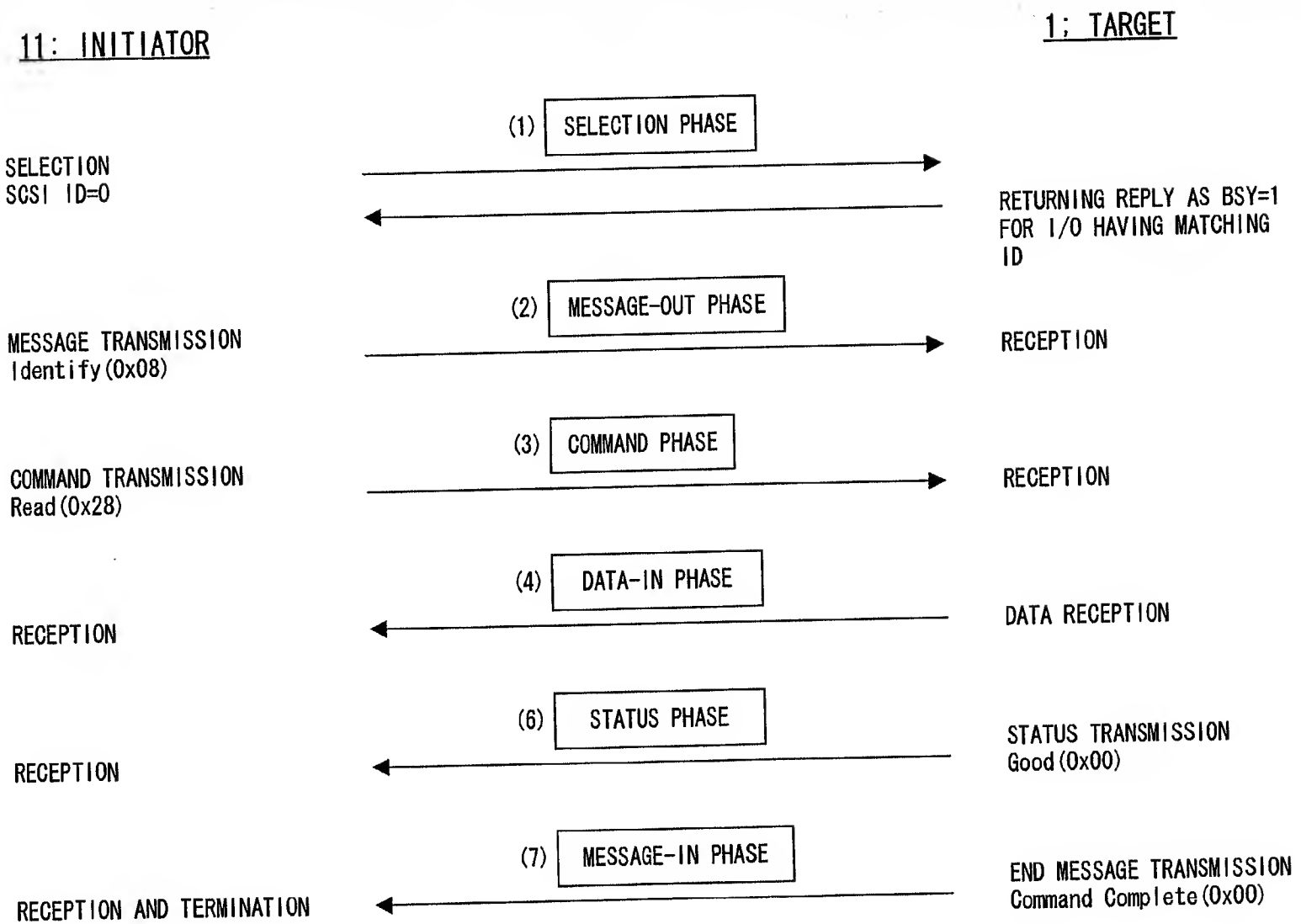

FIG. 6

TOE02F "3158660

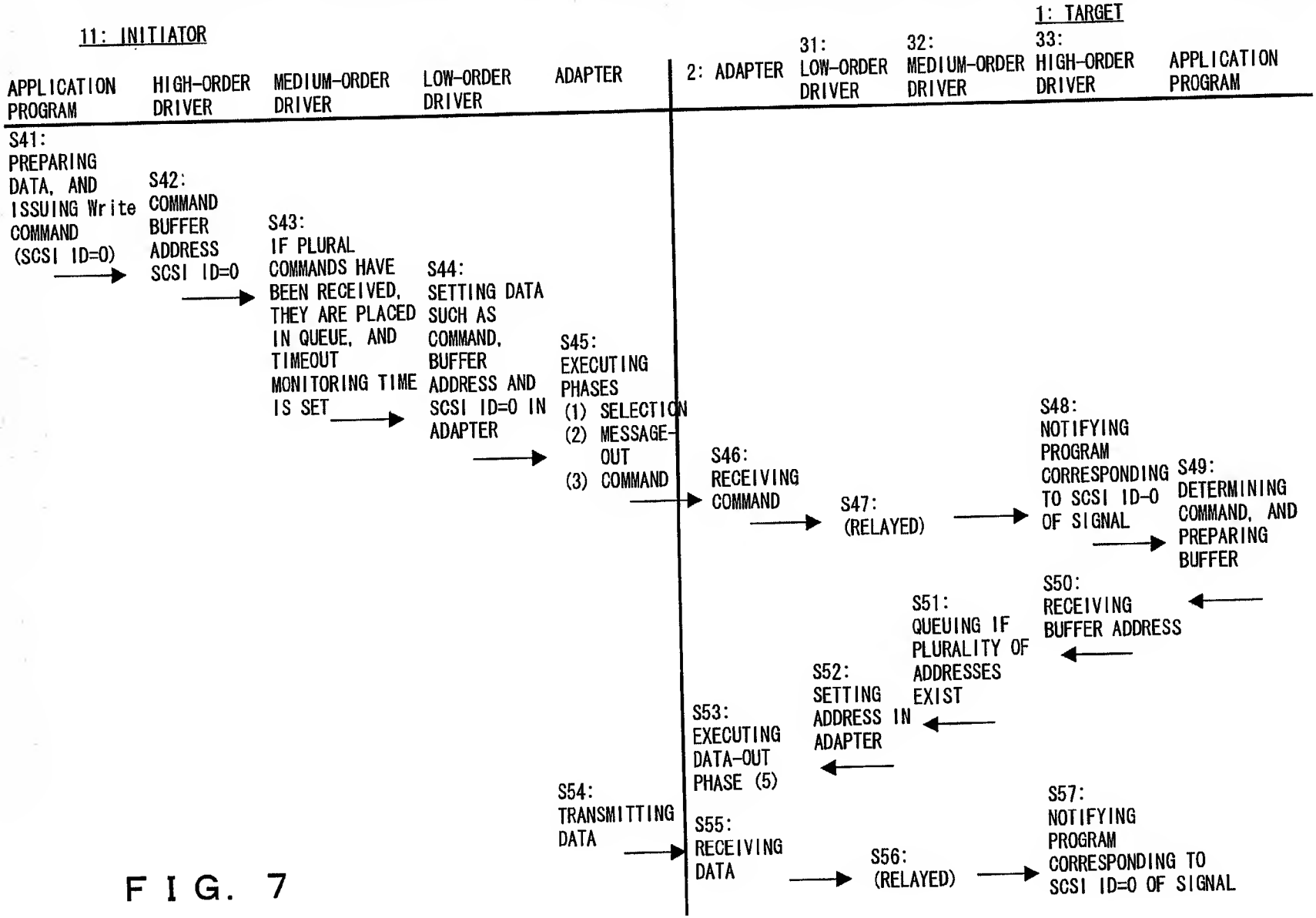

FIG. 7

TOE02F"9T586660

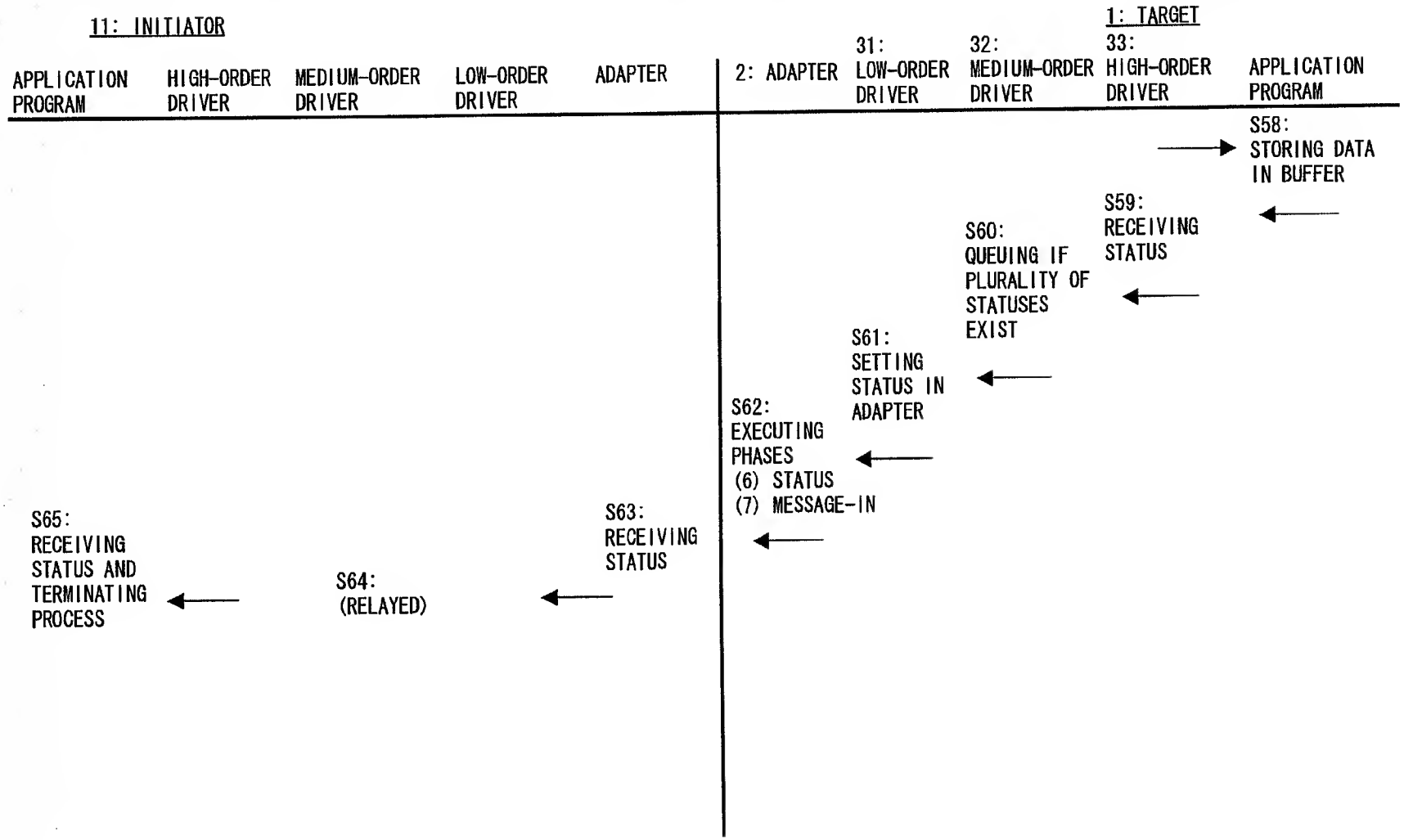

FIG. 8

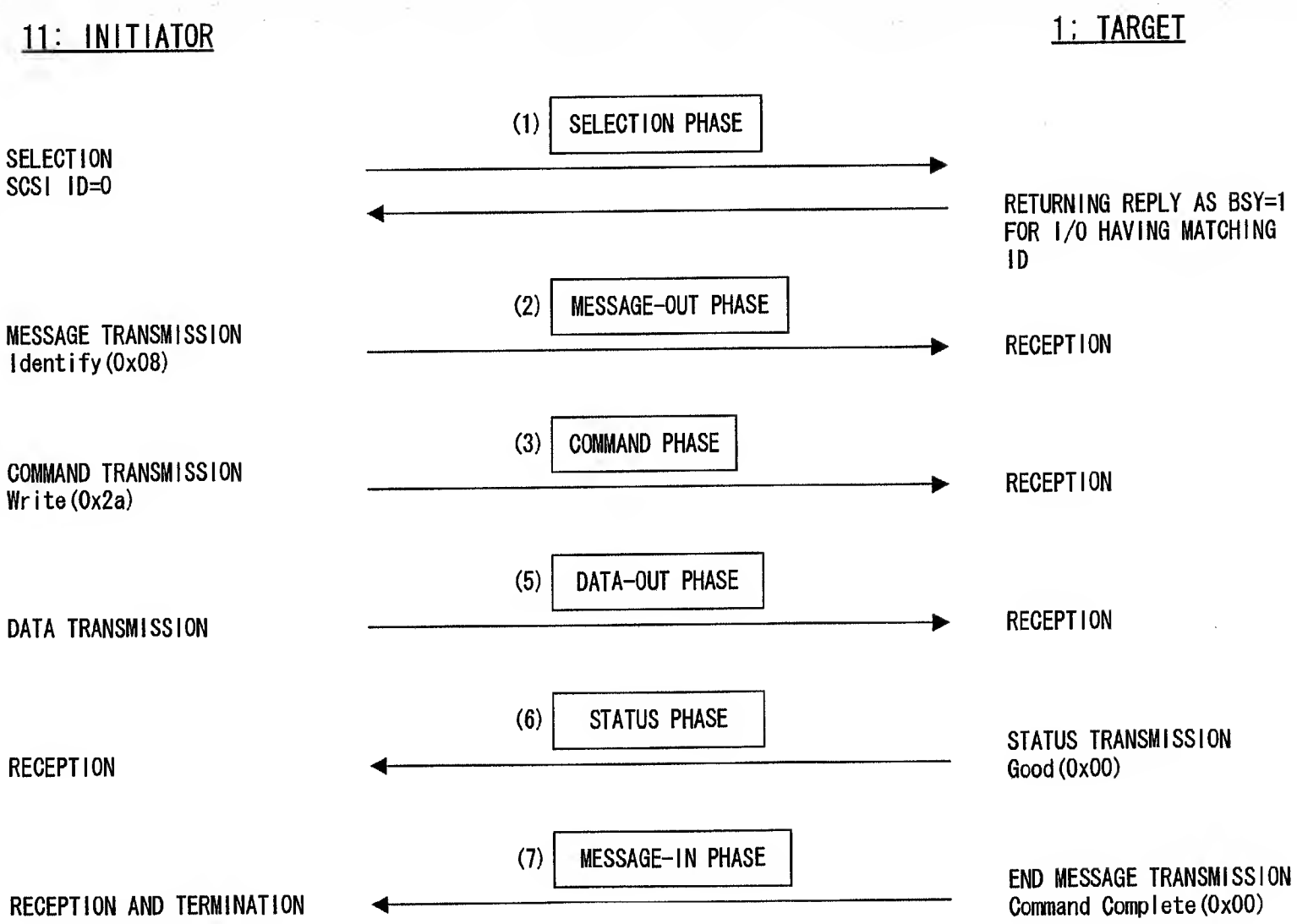
11: INITIATOR
1: TARGET
(1) SELECTION PHASE
SELECTION
SCSI ID=0
RETURNING REPLY AS BSY=1
FOR I/O HAVING MATCHING
ID
(2) MESSAGE-OUT PHASE
MESSAGE TRANSMISSION
Identify(0x08)
RECEPTION
(3) COMMAND PHASE
COMMAND TRANSMISSION
Write(0x2a)
RECEPTION
(5) DATA-OUT PHASE
DATA TRANSMISSION
RECEPTION
(6) STATUS PHASE
RECEPTION
STATUS TRANSMISSION
Good(0x00)
(7) MESSAGE-IN PHASE
RECEPTION AND TERMINATION
END MESSAGE TRANSMISSION
Command Complete(0x00)

FIG. 9

(a) EXAMPLE OF ENCAPSULATION USING FC PROTOCOL
FRAME (Frame Format)

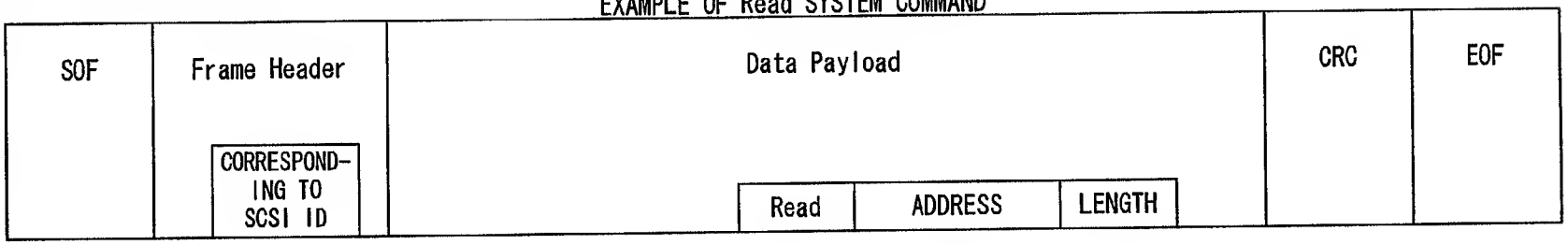

FIG. 10A

(b) EXAMPLE OF ENCAPSULATION USING iSCSI PROTOCOL
DATA FORMAT

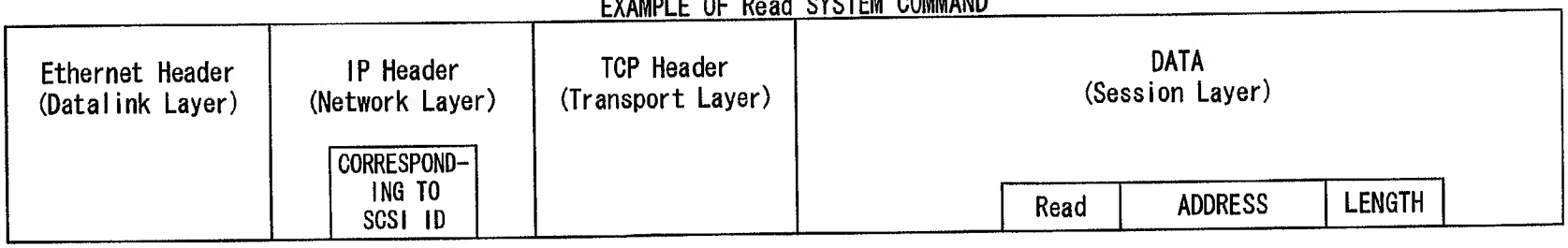

FIG. 10B

JP2001-175586A

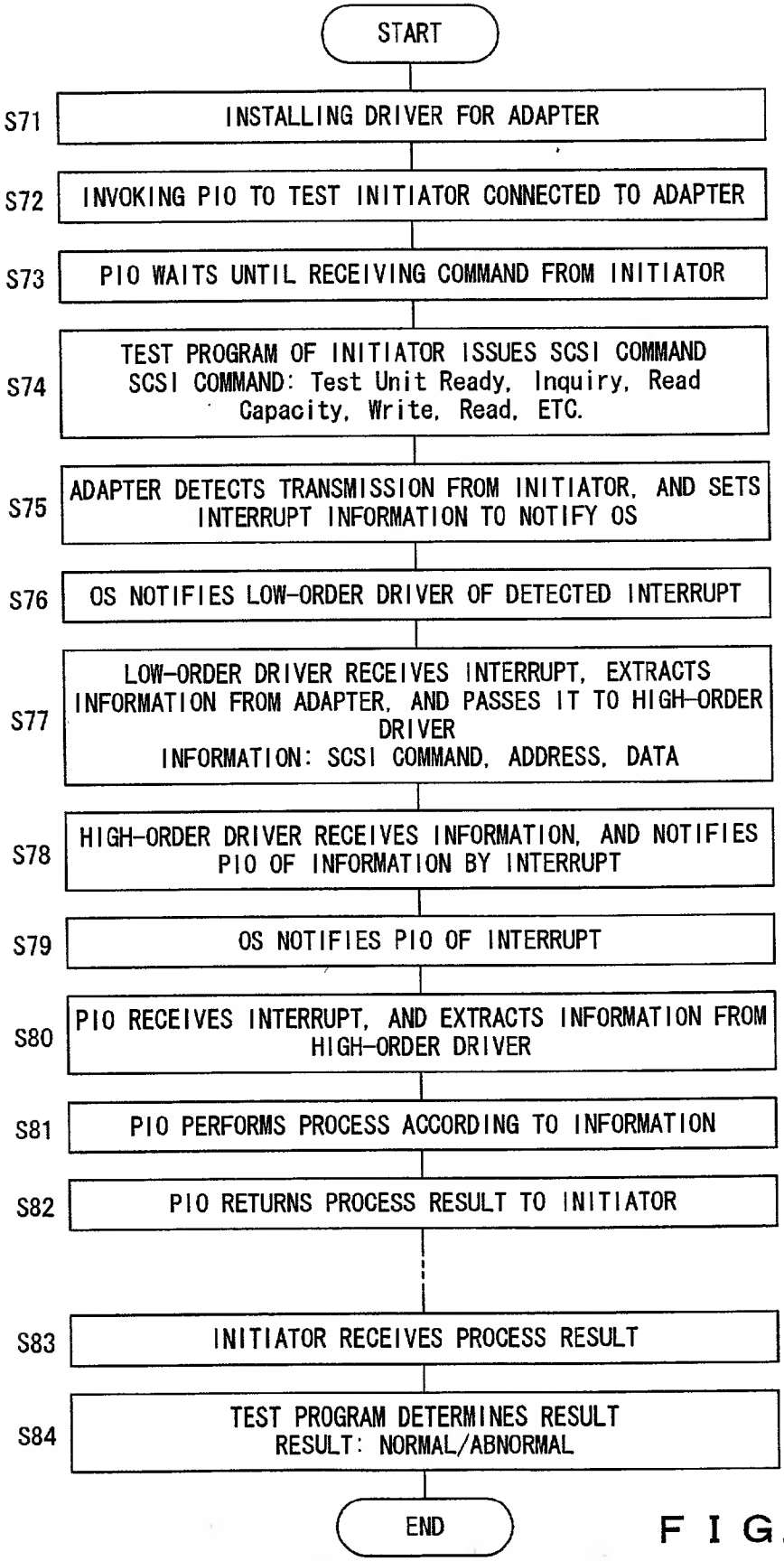

FIG. 11

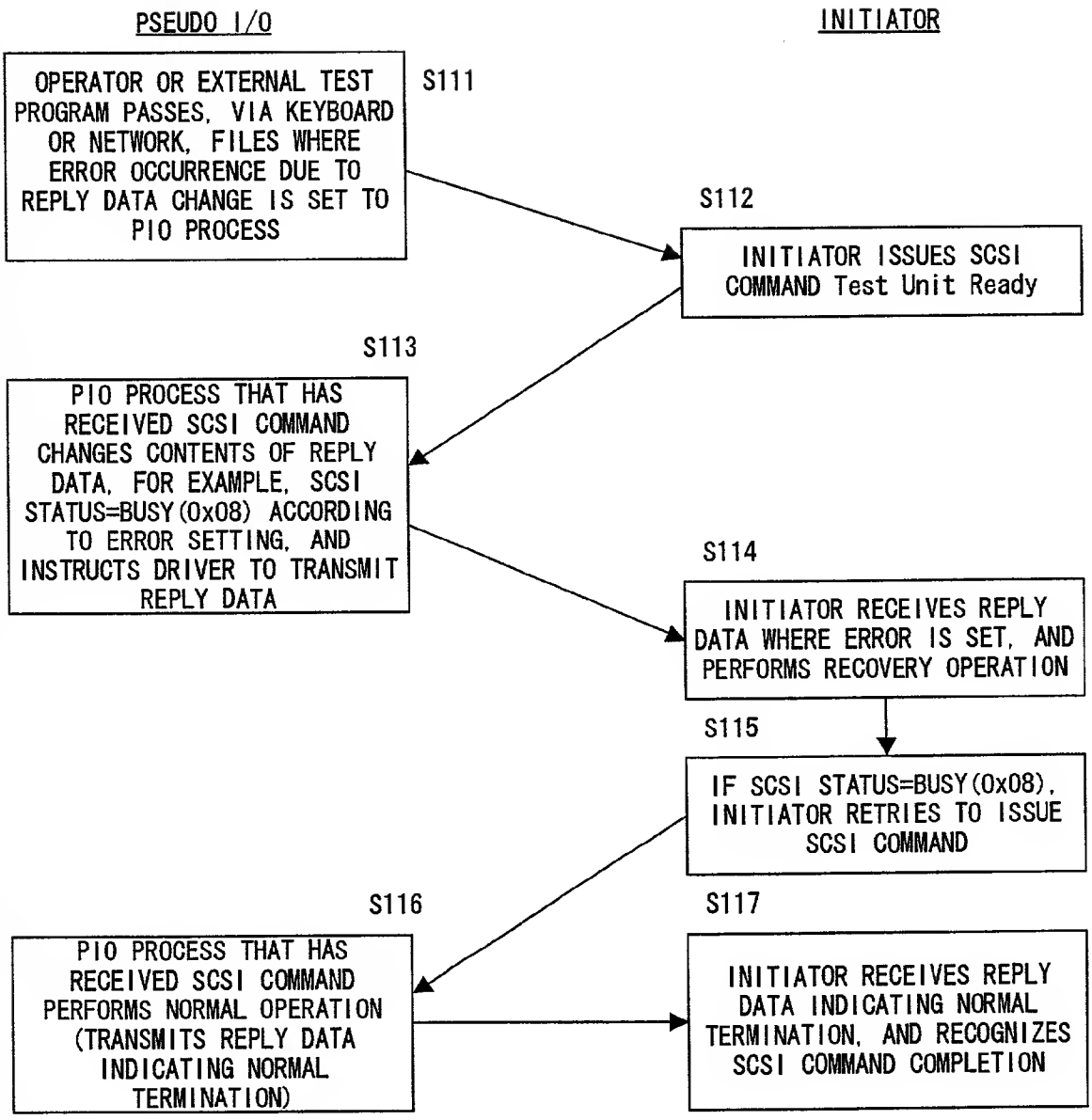
PSEUDO I/O
INITIATOR
OPERATOR OR EXTERNAL TEST PROGRAM PASSES, VIA KEYBOARD OR NETWORK, FILES WHERE ERROR OCCURRENCE DUE TO REPLY DATA CHANGE IS SET TO PIO PROCESS
S111
S112
INITIATOR ISSUES SCSI COMMAND Test Unit Ready
S113
PIO PROCESS THAT HAS RECEIVED SCSI COMMAND CHANGES CONTENTS OF REPLY DATA, FOR EXAMPLE, SCSI STATUS=BUSY(0x08) ACCORDING TO ERROR SETTING, AND INSTRUCTS DRIVER TO TRANSMIT REPLY DATA
S114
INITIATOR RECEIVES REPLY DATA WHERE ERROR IS SET, AND PERFORMS RECOVERY OPERATION
S115
IF SCSI STATUS=BUSY(0x08), INITIATOR RETRIES TO ISSUE SCSI COMMAND
S116
PIO PROCESS THAT HAS RECEIVED SCSI COMMAND PERFORMS NORMAL OPERATION (TRANSMITS REPLY DATA INDICATING NORMAL TERMINATION)
S117
INITIATOR RECEIVES REPLY DATA INDICATING NORMAL TERMINATION, AND RECOGNIZES SCSI COMMAND COMPLETION

FIG. 12

FIG. 13A

PROCESS SETTING FILE			
COMMAND	VALID/INVALID	ACTION	ERROR FILE
TEST UNIT READY	VALID	Control SYSTEM	error_file 1

FIG. 13B

ERROR SETTING FILE (error_file 1)	
TIMING	ERROR CONTENTS
WHEN REPLY DATA IS RETURNED	REPLY DATA CHANGE (EX: GOOD (0x00) → BUSY (0x08)

FIG. 13C

INITIATOR SCSI COMMAND	
COMMAND	CONTENTS
TEST UNIT READY	00 00 00 00 00 00

FIG. 13D

STATUS	
STATUS	VALUE
GOOD	0
BUSY	8

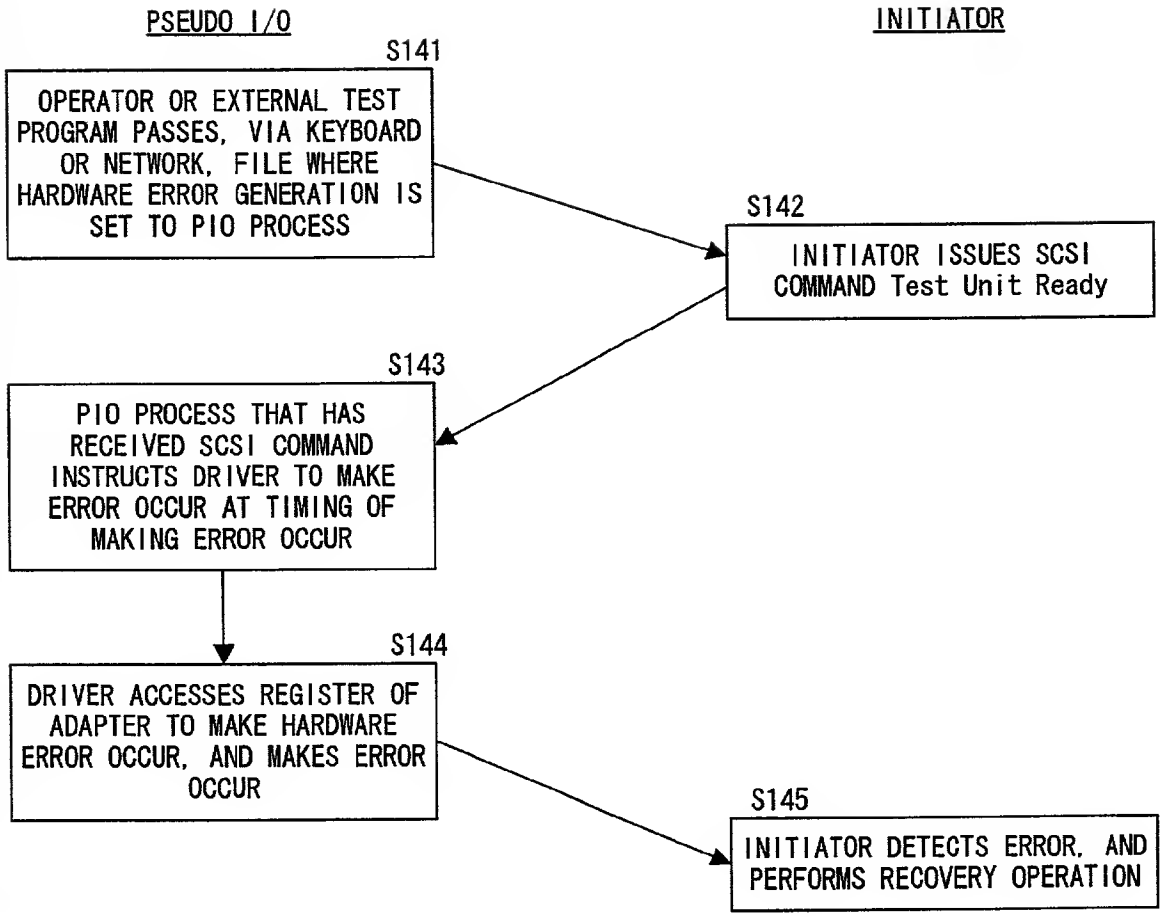
PSEUDO I/O
INITIATOR
S141
OPERATOR OR EXTERNAL TEST PROGRAM PASSES, VIA KEYBOARD OR NETWORK, FILE WHERE HARDWARE ERROR GENERATION IS SET TO PIO PROCESS
S142
INITIATOR ISSUES SCSI COMMAND Test Unit Ready
S143
PIO PROCESS THAT HAS RECEIVED SCSI COMMAND INSTRUCTS DRIVER TO MAKE ERROR OCCUR AT TIMING OF MAKING ERROR OCCUR
S144
DRIVER ACCESSES REGISTER OF ADAPTER TO MAKE HARDWARE ERROR OCCUR, AND MAKES ERROR OCCUR
S145
INITIATOR DETECTS ERROR, AND PERFORMS RECOVERY OPERATION

FIG. 14

FIG. 15A

PROCESS SETTING FILE			
COMMAND	VALID/INVALID	ACTION	ERROR FILE
TEST UNIT READY	VALID	Control SYSTEM	error_file 10

FIG. 15B

ERROR SETTING FILE (error_file 10)	
TIMING	ERROR CONTENTS
WHEN REPLY DATA IS RETURNED	FAULT IS MADE TO OCCUR IN SIGNAL TRANSMITTED OVER CABLE (EX: GENERATING Link Failure)

FIG. 15C

INITIATOR SCSI COMMAND	
COMMAND	CONTENTS
TEST UNIT READY	00 00 00 00 00 00

FIG. 15D

STATUS	
STATUS	VALUE
GOOD	0
BUSY	8

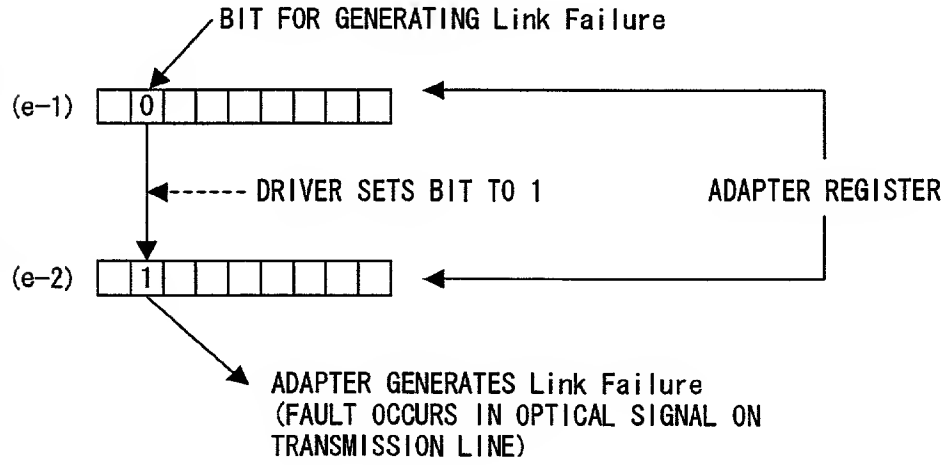

FIG. 15E